

## Article

# A Scientometric Analysis of Forty-Three Years of Research in Social Support in Education (1977–2020)

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**Abstract:** This scientometric study examines the overall research trends, publication and citation structures, authorship and collaboration patterns, bibliographic coupling, and productivity patterns in the field of social support in education. Bibliometric data consisting of 545 documents was retrieved from the Scopus database during a period of 43 years (1977–2020) on 1 January 2021. Data analysis was performed using various scientometric software including MS Excel, VOS Viewer, Biblioshiny, CiteSpace and ScientoPy. The results of the study revealed that the first publication on this topic appeared in 1977, however, the major increase was observed during 2017–2020, whereas the maximum number of publications ( $N = 57$ ) in a single year was published in the year 2020. Similarly, the highest number of citations ( $n = 1002$ ) were observed in the year 1995 with an average of 334 citations per document. The most productive countries were the United States ( $N = 194$ ), the United Kingdom ( $N = 56$ ), and Australia ( $N = 50$  publications). Results further indicated that more than 50.7% of the research in the social support area was done in medicine. Overall, the findings of the study reveal that most of the research in the aforementioned field originated from the developed countries which can be related to the developments in the medical field. The study indicates the importance of social support in the educational context due to an increased trend of inclusion and diversity in the education field. This research is the first bibliometric study in the field of social support in education.



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## 1. Introduction

Social support is often a common study area in social-psychological and social-educational research focusing on social relationships within the members of the same community. It is achieved through interpersonal and inter group relationships [1] and is referred to as a mutual interaction between people, which can be affected by individual character, the nature of the relationship and socio-economical differences [2]. Social support is defined as “an individual’s perceptions of general support or specific supportive behaviors (enabled or enacted upon) from people in their social network, which enhances their functioning and/or may buffer them from adverse outcomes” [3].

Social support comprises both qualitative as well as quantitative aspects under its umbrella [4]. Elaborating on the qualitative aspect, it is more of a process and usually points to the supposed values and expressions received in a social relationship. Adams hypothesized that the three major factors of any social network were a sense of duty or

responsibility, feelings of affection and some common grounds such as interests, shared values etc. [5]. Moreover, Cobb identified three components of social support. Firstly, one's admittance that they are cared for and loved (succor, nurturance, and affiliation), secondly that they are acknowledged (recognition and respect), and lastly that they are a part of a network and have certain duties (group membership) [6]. Hence, social support was classified into four main categories by many researchers [1,7–9]. These are “informational support”, in the form of advice, suggestion etc. [9]; “tangible support”, in the form of financial or material assistance [10]; “emotional support”, described as showing concern, love, empathy, etc. [11] usually provided by family and close friends and “social integration support”, perceived as promoting a sense of belonging [9]. Social integration is more oriented towards kinship and relationships rather than social action and interactions [1].

Social support plays a crucial role in ensuring students' well-being in an educational context [12–14]. It can be defined as the overall “perception one has of being cared for, valued, and included by others within a network of caregivers, teachers, peers, and community members [15]. Due to different stages of one's educational journey, students are often faced with change and transition, which is referred to as a setting stone period in the lives of students [16,17]. This change is not confined to just change in academic course books and physical location of the classroom, it extends to adaptation to new places, people, routines [16], culture, language, social customs, etc. The impact of these changes and transitions can range from physical health to psychological and emotional well-being [18]. Furthermore, this period of change and transition can be different for different students, demanding different amounts of time and effort and can further influence their performances negatively or positively [19]. The adaptation to new places, people and lifestyles may lead to change students' overall cultural behaviors as they are likely to lose control of the new environment because of their previous experiences. In this scenario, social support can prove influential as it can help students to cope with the new challenges and reduce stress. This support can be offered by classmates, parents and teachers.

The importance of the role played by the family members, teachers and peers in students' happiness, academic achievement, motivation, cooperation, and school adjustment has been emphasized by many researchers [14,18,20,21]. Furthermore, teachers are considered to provide both instructional as well as emotional support to students in the educational context, though parents are commonly considered emotional support providers to children and young adults [22,23]. This instructional and emotional support further expands to help students from being dropped out [24]. Studies have shown that preferences for social support providers (for example, teachers, peers, family members/caregivers) change with the passage of time. For example, children in elementary schools prefer their family members/caregivers [25], middle school students prefer both their friends and caregivers [26] and by age sixteen, they rely on their peers and friends for social support [27]. On the other hand, younger students receive more social support from teachers as compared to older students [27]. Furthermore, students' individual differences in socioeconomic status [28], gender [29], culture [30], and race and ethnicity [31] also affects the influence of social support on students.

There are a plethora of research studies in the field of social support in the educational context. However, the research contexts are not limited to teaching and learning in an educational setting, rather it expands to health education [32], family education [33–35], community education [36] and work-related professional settings [37]. It is interesting to note that until now no bibliometric study has been published to examine and document research trends in the role played by social support in the lives of students and teachers in an educational setting. As bibliometric studies offer insights into quantitative aspects [38] of research trends in a particular field, such a study in the above-mentioned field will not only shed light on existing research trends in exploring the role of social support in educational setting but will also help researchers to identify future research areas and help policy makers in making effective policy decisions [39]. Hence, this study aims to explore the following research questions.

1. What are the publishing and citation structure in social support research in education from 1977 to 2020?
2. Which of the countries, organizations, and authors are most productive in social support in education research?
3. Which journals are frequently preferred by social support researchers?
4. What are the authorship and collaborative patterns of researchers working on social support in education?
5. What are most frequent keywords and major themes used in social support research in education?
6. What kind of bibliographic coupling of countries, journals and authors exist in the social support research in education?

## 2. Methodology

### 2.1. Method

The bibliometric method was used to examine the publications output, research trends and publishing patterns on social support in education. Bibliometric is a quantitative method for analyzing publishing trends of scholarly documents (research articles, conference papers and books etc.) Tijjani et al. described bibliometric method as “an established quantitative method to investigate publishing patterns of scholarly work” [40]. Further, it is a method that provides scientific landscape of authors, countries, organizations, and collaborations contributing in global scientific literature [41]. Bibliometric data from published literature on social support were extracted. Conceptual (co-occurrences of authors/keywords, thematic evolution), intellectual (co-citation network), and social (collaboration network) structures of the retrieved data were also studied.

### 2.2. Database Selection

There are many indexing and citation databases, with global and regional coverage of journals, books, reviews, and conference proceedings. Each database has its style, concentration, and area of focus. Scopus was selected to extract the data because of its comprehensive coverage in the field of social sciences. Scopus is the world’s largest data source of peer reviewed scientific literature with 75 million indexed items. Furthermore, Scopus updates the data on daily basis and 32% of the overall content indexed in Scopus belongs to the social sciences literature. Furthermore, there are number of studies that prioritize Scopus (over other databases such as Web of Science, Dimensions, etc.) for bibliometric studies due to its largest data source [42,43]. Scopus is also known as a curated, and high-quality bibliometric data source for academic research. Researchers have been using it as a bibliometric data source on a large-scale [42–44].

### 2.3. Search Query

To retrieve the bibliographic data on social support in education, the following search query was run in the main search interface of the Scopus database in the search field type: “Article Title, Abstract, Keywords.” Search terms were combined by the operator “AND” TITLE-ABS-KEY (“social support” AND education) AND SUBJAREA (soci).

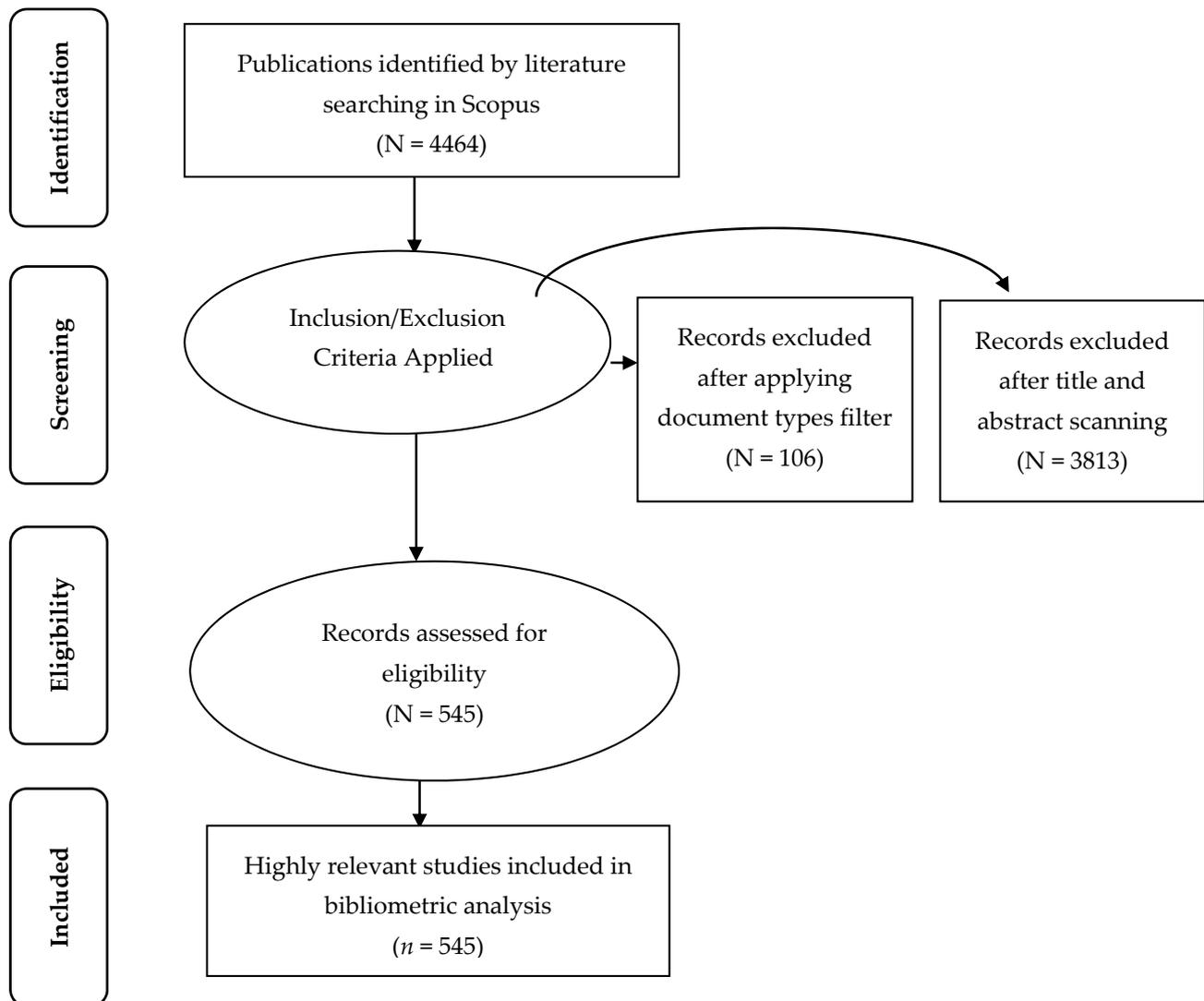
### 2.4. Date of Data Extraction

The query was run on the 1st of January 2021 at Imam Abdulrehman Bin Faisal University, Saudi Arabia. A total of 4464 documents were found using this search query.

### 2.5. Inclusion/Exclusion Criteria

No publication year filter was used to get these 4464 documents; however, search results were limited to Scopus sub-categories related to social sciences. The search was also limited to article, book, book chapter, conference paper, and review articles. No language or geographical filters were applied. Short survey, note, editorial, letter, conference review, retracted, and undefined document types were excluded. From the initial search results

of 4464 documents, 3813 records were excluded after individual screening of titles and abstracts of all acceptable documents. The final 545 records consisting of articles (N = 490), Books (N = 6), book chapters (N = 16), conference papers (N = 2), and review articles (N = 31) appeared in the period from 1977 to 2020 (Figure 1).



**Figure 1.** Four-phase flow diagram of data extraction and filtration process of social support in education.

The whole process was repeated by two authors to standardize the selection of items and ensure the data's accuracy.

## 2.6. Data Analysis

Different bibliometric analysis tools were used to get meaningful data from the 545 yielded documents. MS Excel (V16.0) was used to perform some basic functions, e.g., to know publications and citation trends. VOS viewer (version 1.6.15), Biblioshiny (version 2.0), CiteSpace (version 5.7.R3), Gephi (version 0.9.2), and ScientoPy (version 2.0.3) are the tools that helped the authors in data visualization such as journals, researchers, and individual publications. The tools were also used in finding the relations in citations, bibliographic coupling, co-citation, or co-authorship.

### 3. Results and Discussion

#### 3.1. Research Productivity

Figure 2 depicts the annual research productivity in social support in education in terms of publications and citations. The first publication on this topic appeared in 1977 and was unable to get any citation. After the appearance of the first publication in 1977, social support in education research productivity progressively increased. The major increase was observed during 2017–2020, where 38% of the publications were produced. In 1995, three publications were cited 1002 times. The maximum number of publications ( $N = 57$ ) occurred in year 2020.

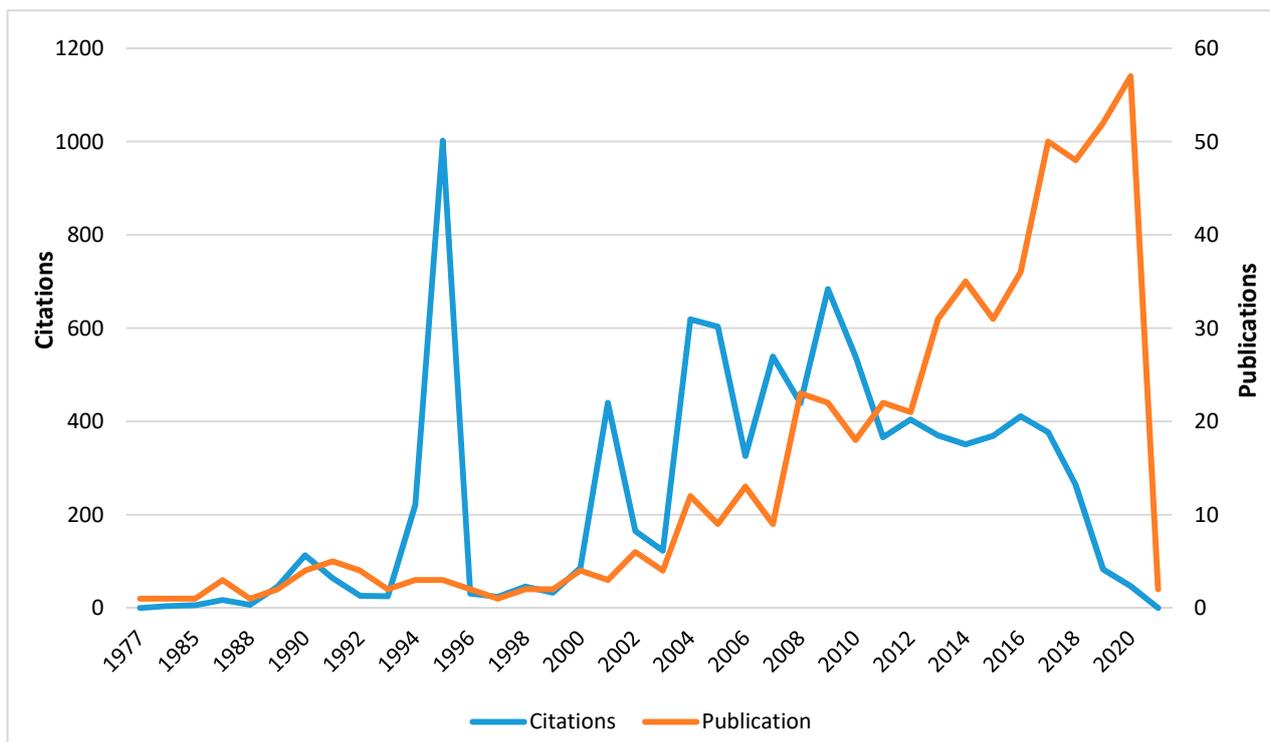


Figure 2. Publications and citation trends in social support in education from 1977 to 2020.

#### 3.2. Publishing and Citation Structure of Social Support in Education

Table 1 demonstrates annual publishing and citation structure of social support in education. A total of 383 publications (70.28% of total publications) were produced between 2011–2020, and the number of citations during the same time period was 3042 (32.82% of total received citations). The highest number of documents ( $N = 57$ ) appeared in 2020 while the highest number of citations ( $N = 1002$ ) were received in the year 1995 with an average of 334 citations per document. The publication trends indicate that the research on social support in education is significantly increasing with the passage of time. The average citations per cited publication (C/CP) of 1995 is 334. The year 2001 has 146.67 C/P and C/CP, followed by 1994 (73.67 C/P and C/CP).

**Table 1.** Citation structure of social support in education publications between 1977 and 2020.

PY	TP	TC	NCP	C/P	C/CP	H-Index
1977	1	0	0	0.00	0	0
1983	1	4	1	4.00	4.00	1
1985	1	6	1	6.00	6.00	1
1987	3	17	2	5.67	8.50	2
1988	1	7	1	7.00	7.00	1
1989	2	46	2	23.00	23.00	2
1990	4	113	4	28.25	28.25	4
1991	5	64	4	12.80	16.00	4
1992	4	26	4	6.50	6.50	3
1993	2	25	2	12.50	12.50	2
1994	3	221	3	73.67	73.67	3
1995	3	1002	3	334.00	334.00	2
1996	2	31	2	15.50	15.50	2
1997	1	24	1	24.00	24.00	1
1998	2	46	2	23.00	23.00	2
1999	2	33	2	16.50	16.50	2
2000	4	86	3	21.50	28.67	2
2001	3	440	3	146.67	146.67	3
2002	6	165	6	27.50	27.50	6
2003	4	123	4	30.75	30.75	4
2004	12	619	11	51.58	56.27	11
2005	9	603	9	67.00	67.00	8
2006	13	326	13	25.08	25.08	9
2007	9	539	8	59.89	67.38	8
2008	23	439	20	19.09	21.95	12
2009	22	684	21	31.09	32.57	12
2010	18	539	17	29.94	31.71	13
2011	22	366	19	16.64	19.26	9
2012	21	404	21	19.24	19.24	10
2013	31	370	27	11.94	13.70	14
2014	35	351	31	10.03	11.32	11
2015	31	369	29	11.90	12.72	12
2016	36	411	30	11.42	13.70	10
2017	50	377	40	7.54	9.43	12
2018	48	264	40	5.50	6.60	8
2019	52	83	29	1.60	2.86	4
2020	57	47	12	0.82	3.92	5
2021	2	0	0	0.00	0.00	0

These findings indicate that the discipline has progressed slowly but has gained prominence in 2020 in terms of publication. Until now research in the social support area was limited to health education [32], family education [33–35], community education [36] and work-related professional setting [37]. One of the main reasons of increased research in the social support in education could be the increased diversity in university enrollments in terms of age, gender and nationalities discussed in-depth in the proceeding sections. Another reason for this increase could be the revolution and ubiquity of information technology (IT) in education and social support.

Table 1 shows “social support in education” annual citation structure between 1977 and 2020. It also shows the total number of social support in education publications (TP), number of cited publications (NCP), total citations (TC), average citations per publication (C/P), average citations per cited publication (C/CP), and the h-index (h).

### 3.3. Leading Countries and Institutions

Table 2 summarizes the top ten countries and organizations on social support in education research productivity in terms of publications, citations, and citation impact. The top countries with the highest number of publications included the United States

( $N = 194$ ), the United Kingdom ( $N = 56$  s), and Australia ( $n = 50$  publications). Israel, at the bottom of the list, produced 9 publications. Publications from the United States were cited 3392 times and had a citation impact of 17.48. Despite lower publication volumes, publications originating in Canada ( $N = 31$ ) had higher citation impact (30.87). Spain had the lowest citation impact (2.67) with 15 publications and 40 citations among the top ten countries.

**Table 2.** Leading countries and institutions.

Top 10 Countries					Top 10 Organizations				
Rank	Country	TP	TC	CI	Rank	Organization	TP	TC	CI
1	United States	194	3392	17.48	1	The University of Texas at Austin	10	230	23.00
2	United Kingdom	56	1377	24.59	2	Maastricht University	7	57	8.14
3	Australia	50	581	11.62	3	University of Illinois at Chicago	7	116	16.57
4	Canada	31	957	30.87	4	University of Florida	6	48	8.00
5	Germany	25	303	12.12	5	Humboldt University of Berlin	5	123	24.60
6	Turkey	21	86	4.10	6	University of Helsinki	5	74	14.80
7	Netherlands	17	292	17.18	7	University of Antwerp	5	121	24.20
8	Spain	15	40	2.67	8	The Education University of Hong Kong	5	21	4.20
9	South Africa	13	42	3.23	9	University of New South Wales, Sydney, Australia	5	101	20.20
10	Israel	9	124	13.78	10	Florida State University	5	24	4.80

As far as the top 10 organizations in social support in education are concerned, the University of Texas is at the top with 10 publications and 230 citations. Maastricht University and the University of Illinois at Chicago both are at number two with 7 publications each and 57 and 116 citations, respectively followed by the University of Florida (6 publications and 48 citations). The remaining six organizations contributed 5 publications each. Five publications from the Humboldt University of Berlin got 123 citations and had a citation impact of 24.6. The University of Antwerp with the same number of publications as that of the Humboldt University of Berlin was able to get 121 citations and had a citation impact of 24.2. The top organization in terms of publications, the University of Texas at Austin, received 230 citations and is at number three with a citation impact of 23. The citation impact of the Education University of Hong Kong is 4.2 (5 publications and 21 citations).

There may be various reasons behind the highest contributions by the institutions from developed countries. For instance, there is an increase in the enrollment of international students in the universities in OECD (developed) countries. These enrollments are not only diverse from age perspectives but from nationality perspectives as well. As mentioned by Mishra, during the last ten years the enrolment of students aged 25 to 34 years in the universities of Australia, Czech Republic, Greece, Iceland, Italy, Netherlands, and Switzerland has increased by more than 10% [45]. Furthermore, there is an increase in international students by 85% in the United States only [46]. As stated by Vedder et al., all students irrespective of their cultural background require social support and in particular immigrant (international) students [14]. Hence the increasing number of students in universities in terms of diversity necessitate a social support system in the education sector and related research.

### 3.4. Most Productive Authors

Table 3 lists the most productive authors for social support in education research. The author, Pyhältö, K. affiliated with the University of Oulu had 5 publications, and was cited 74 times with a citation impact of 14.80 (the most in the list). Seven authors (Soini, T., Gijbels, D. Bodycott, P., Mak, A.S., Ramos-Díaz, E. and Yu, B.) produced 21 publications with an

equal share and received 53, 53, 43, 23, 23, 17, and 7 citations, respectively. Cunningham, M. is on the bottom of the list but with a high number of citations (45) and high citation impact (22.5). The overall productive authors result indicates that this is an emerging area and have scope for significant researchers in the future.

**Table 3.** The Top 10 most influential authors in the field of social support in education between 1977 and 2020.

Rank	Authors	Affiliation	Country	TP	TC	CPY	h-Index
1	Pyhältö, K.	University of Oulu	Finland	5	74	14.80	5
2	Ramos-Díaz, E.	The University of the Basque Country	Spain	3	17	5.67	3
3	Soini, T.	University of Tampere	Finland	3	53	17.67	3
4	Pietarinen, J.	University of Eastern Finland	Finland	3	53	17.67	3
5	Bodycott, P.	University of Canberraact	Australia	3	23	7.67	2
6	Gijbels, D.	University of Antwerp	Belgium	3	43	14.33	2
7	Mak, A.S.	University of Canberraact	Australia	3	23	7.67	2
8	Yu, B.	The Education University of Hong Kong	Hong Kong	3	7	2.33	1
9	Cunningham, M.	Tulane University, New Orleans	United States	2	45	22.50	2
10	Jaarsma, A.D.C.	University Medical Center Groningen	Netherlands	2	21	10.50	2

This table lists the top authors on social support in education with at least two publications and seven citations between 1977 and 2020. It also shows the institution and country affiliated with the author, total number of publications by each author (TP), total citations associated with these publications (TC), citations per publication (C/P), and h-index (h).

### 3.5. Most Influential Journals

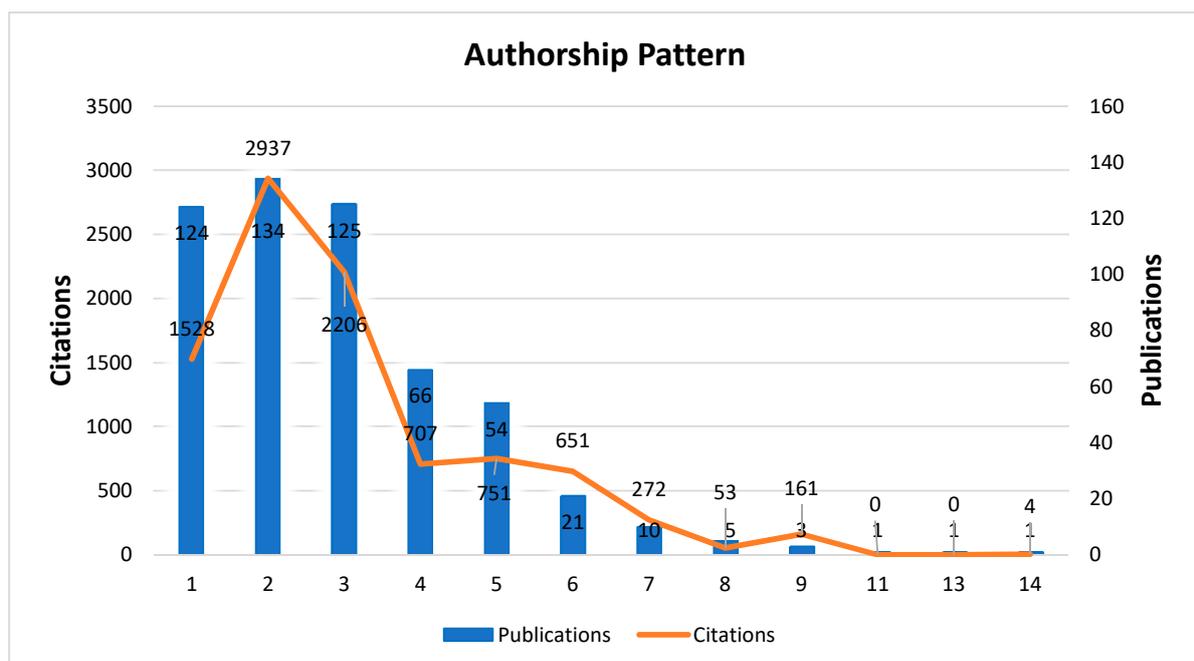
Table 4 presents the top 10 research journals that produced literature on social support in education. These ten journals produced 165 publications (36%); four of those journals produced over 100 publications. Academic Medicine (Quartile 1), BMC Medical Education (Quartile 2), and Medical Teacher (Quartile 1) emerged as top sources with a total of 90 publications and 2463 citations, followed by the Medical Education (Quartile 1) with 29 publications and 1228 citations. Three journals, Social Work Education, Medical Education Online and Teaching and Learning in Medicine produced 21 publications with an equal share and received a total of 346 citations; these three journals are in Quartile 2. Social Work Education is the only nonimpact factor journal in this list. As found in the present bibliometric study, more than 50.7% of the research in the social support area has been done in medicine and the supremacy of this area might be related to its evolution and relevance [47]. Academic Medicine was the source with the highest impact factor (5.354); it produced 30 publications and received the highest number of citations (1235). Most of the journals belonged to England (5) and the United States (3), while Netherlands and Sweden had one journal each. This shows that the research of this area has better chances to get published in the impact factor journals.

**Table 4.** Most influential journals on social support in education.

Rank	Journal	TP	TC	IF	Q	Publisher	Country
1	Academic Medicine	30	1235	5.354	1	Lippincott Williams & Wilkins	United States
2	BMC Medical Education	30	565	1.831	2	Biomed Central Ltd.	England
3	Medical Teacher	30	663	2.654	1	Taylor & Francis Ltd.	England
4	Medical Education	29	1228	4.57	1	Wiley-Blackwell Publishing Ltd.	England
5	Journal of Studies in International Education	9	171	2.148	2	Sage Publications Inc	United States
6	Studies in Higher Education	8	513	3	1	Routledge Journals, Taylor & Francis Ltd.	England
7	Advances in Health Sciences Education	8	125	2.48	1	Springer	Netherlands
8	Social Work Education	7	136	N.A	2	Taylor and Francis Ltd.	England
9	Medical Education Online	7	92	1.97	2	Co-Action Publishing	Sweden
10	Teaching and Learning in Medicine	7	118	1.848	2	Taylor & Francis Ltd.	United States

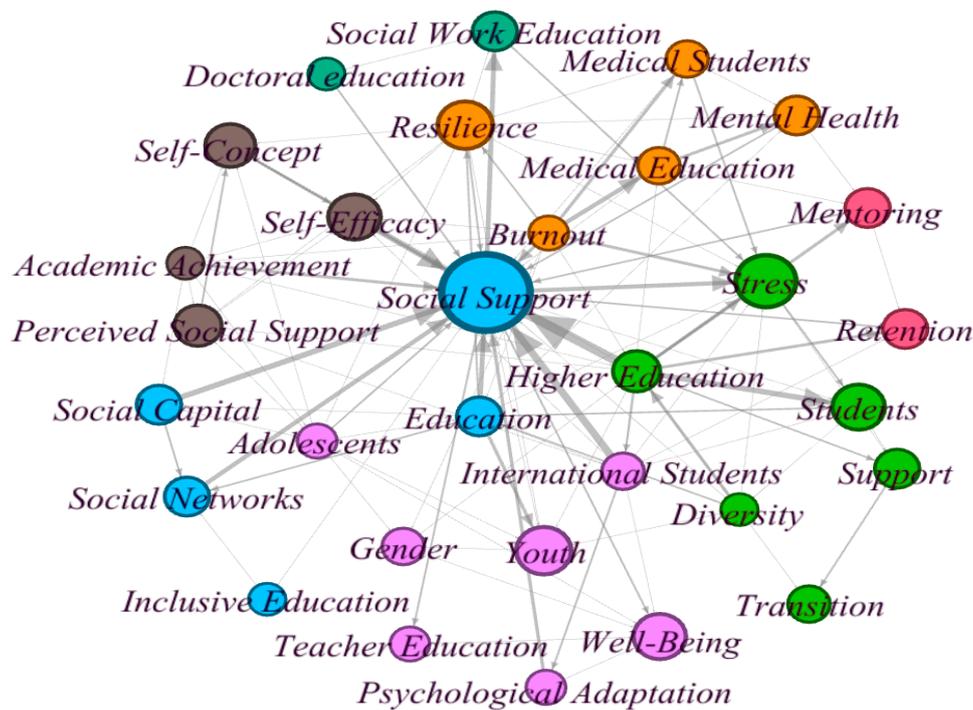
### 3.6. Authorship Pattern

Figure 3 depicts the authorship patterns in social support in education. The top three authorship patterns were two authors (134 publications), three authors (125 publications), and one author (124 publications). This pattern trend is quite opposite to other disciplines where top authorship patterns comprise more than 3 authors [48]. This trend may be attributed to the slow progress of the field and a limited number of research publications, mainly from a limited number of countries (developed). The relationship between authors and publications is inversely proportional from four authors to nine authors; an increase in the number of authors resulted in a decrease in the number of publications. No publication is authored by ten or twelve authors. 11, 13 and 14 authors have the same number of publications, that is, one.

**Figure 3.** Authorship pattern of social support in education publications.

### 3.7. Keyword Co-Occurrences in Social Support

Figure 4 presents the keyword co-occurrences in social support in education research. Keywords with minimum 5 times co-occurrences or more were included; 31 of 1333 keywords met the criterion. It shows that top five keywords are social support, higher education, education, international students, and stress with 98, 47, 26, 17, and 15 weightages of occurrences, respectively. Keywords (self-concept, youth, retention, support, doctoral education, inclusive education, and transition) show minimum co-occurrences (5) in this group.



**Figure 4.** Keywords co-occurrences with minimum co-occurrences of 5 times; 31 meet the TH.

Closely related keywords are classified into seven clusters; the connections between the clusters can be described using quantitative network indicators. Social support (key word with highest occurrences) is placed in cluster 3 along with education, social capital, social networks and inclusive education. Social support, higher education, education, stress, and burnout are the keywords with 74, 36, 21, 21, and 20 total link strengths, respectively.

### 3.8. Major Themes in Social Support in Education

Table 5 lists the twenty themes in social support in education. Total publications classified under 20 themes are 351 and these publications were cited 5152 times. Social support is the top theme with 97 publications and 921 citations with 9.49 average citations per publication (C/P), followed by higher education (47 publications and 362 citations with 7.7 C/publications). Major temporal evolution of these two themes can be seen in the time period P3 (2011–2021) with 75 and 42 publications, respectively. Education is the theme which received 966 citations, the highest one in this table, for 31 publications, whereas the medical theme has 68.27 average citations per publication (C/P) for 11 publications and 751 citations. The major five themes of the selected time periods are under:

- P1 (1977–2000) Social Support (4), Medical (4), Education (3), Stress (3) and Undergraduate (3)  
 P2 (2001–2010) Social Support (18), Education (8), Stress (7), Medical (5), and Higher Education (5)  
 P3 (2011–2021) Social Support (75), Higher Education (42), Education (20), International Students (16), and Resilience (13)

**Table 5.** Main themes included in social support in education publications between 1977 and 2020.

SR.	Themes	TP	TC	C/P	P1	P2	P3
					1977–2000	2001–2010	2011–2021
1.	Social Support	97	921	9.49	4	18	75
2.	Higher Education	47	362	7.70	0	5	42
3.	Education	31	966	31.16	3	8	20
4.	Stress	20	363	18.15	3	7	10
5.	International Students	17	155	9.12	0	1	16
6.	Burnout	14	217	15.50	1	2	11
7.	Resilience	13	155	11.92	0	0	13
8.	Students	13	188	14.46	2	2	9
9.	Medical	11	751	68.27	4	5	2
10.	Medical Education	11	89	8.09	0	0	11
11.	Mental Health	9	177	19.67	0	2	7
12.	Self-Efficacy	9	168	18.67	0	1	8
13.	Social Capital	8	93	11.63	0	2	6
14.	Social Networks	8	83	10.38	0	3	5
15.	Teacher Education	8	95	11.88	0	0	8
16.	Perceived Social Support	7	67	9.57	0	0	7
17.	Medical Students	7	84	12.00	0	1	6
18.	Gender	7	70	10.00	0	0	7
19.	Social Work Education	7	83	11.86	0	3	4
20.	Undergraduate	7	65	9.29	3	1	3

This table lists the main themes included in social support in education. It also shows the total number of publications classified under the respective theme (TP), total citations associated with these publications (TC), and average citations per publication (C/P). The remaining three columns (P1, P2, and P3) depict the temporal evolution of the themes over three periods (1977–2000, 2001–2010, 2011–2021, respectively) and presents the respective count of the publications for each period.

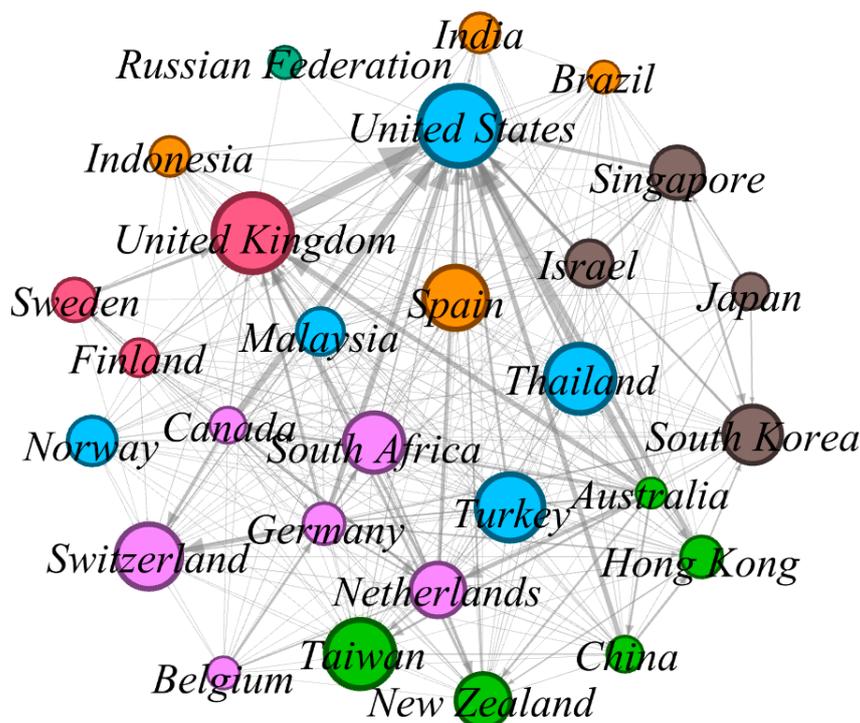
### 3.9. Bibliographic Coupling of Countries

Figure 5 presents the bibliographic coupling of countries in social support in education research. Countries with a minimum 5 documents or more were included; 28 of 73 countries meet the criterion. Countries with the highest bibliographic coupling activity included the United States (194 documents, 3392 citations, and 3629 total link strength); the United Kingdom (56 documents, 1377 citations, and 1820 total link strength); and Australia (50 documents, 581 citations, and 1766 total link strength). Countries are grouped into clusters for their close relations in content; clusters' connections are described using quantitative network indicators. Bibliographic couplings of countries in social support in education research were classified into seven clusters. The United States, the country with the highest research production in social support in education research with total publications of 194 (citations 3392) [Table 2], is in the cluster 3 along with Turkey, Malaysia, Norway, and Thailand. The United Kingdom (publications 56, and citations 1377, Table 2) is with Finland and Sweden in the cluster 6. The Russian Federation is placed in cluster 7.

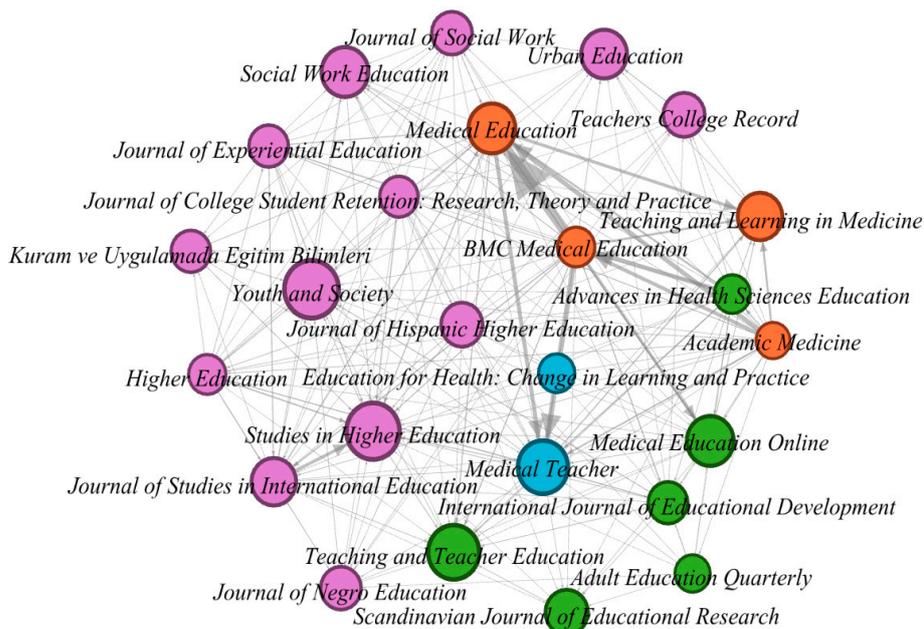
### 3.10. Bibliographic Coupling of Journals

Bibliographic coupling is a measure of subject matter commonality among different publications, and journals are bibliographically coupled if they refer to a common third publication. Figure 6 illustrates the bibliographic coupling among selected journals. The size of the circle and its colors indicate bibliographic coupling levels and different coupling clusters, respectively. Journals with a minimum of three or more publications were included; 25 of 259 journals met this criterion. Journals with the highest bibliographic coupling activity included Academic Medicine (30 documents, 1235 citations, and a 214 total link strength); the BMC Medical Education (30 documents, 565 citations, and a 490 total link

strength); and Medical Teacher (30 documents, 663 citations, and a 234 total link strength). Journals that are closely related in content are classified into clusters; the connections between the clusters can be described using quantitative network indicators. Bibliographic couplings of journals in social support in education research were classified into four clusters and visually displayed using the gephi package.



**Figure 5.** Bibliographic coupling of countries that published a minimum of 5 documents out of 73 countries; 28 meet the TH.



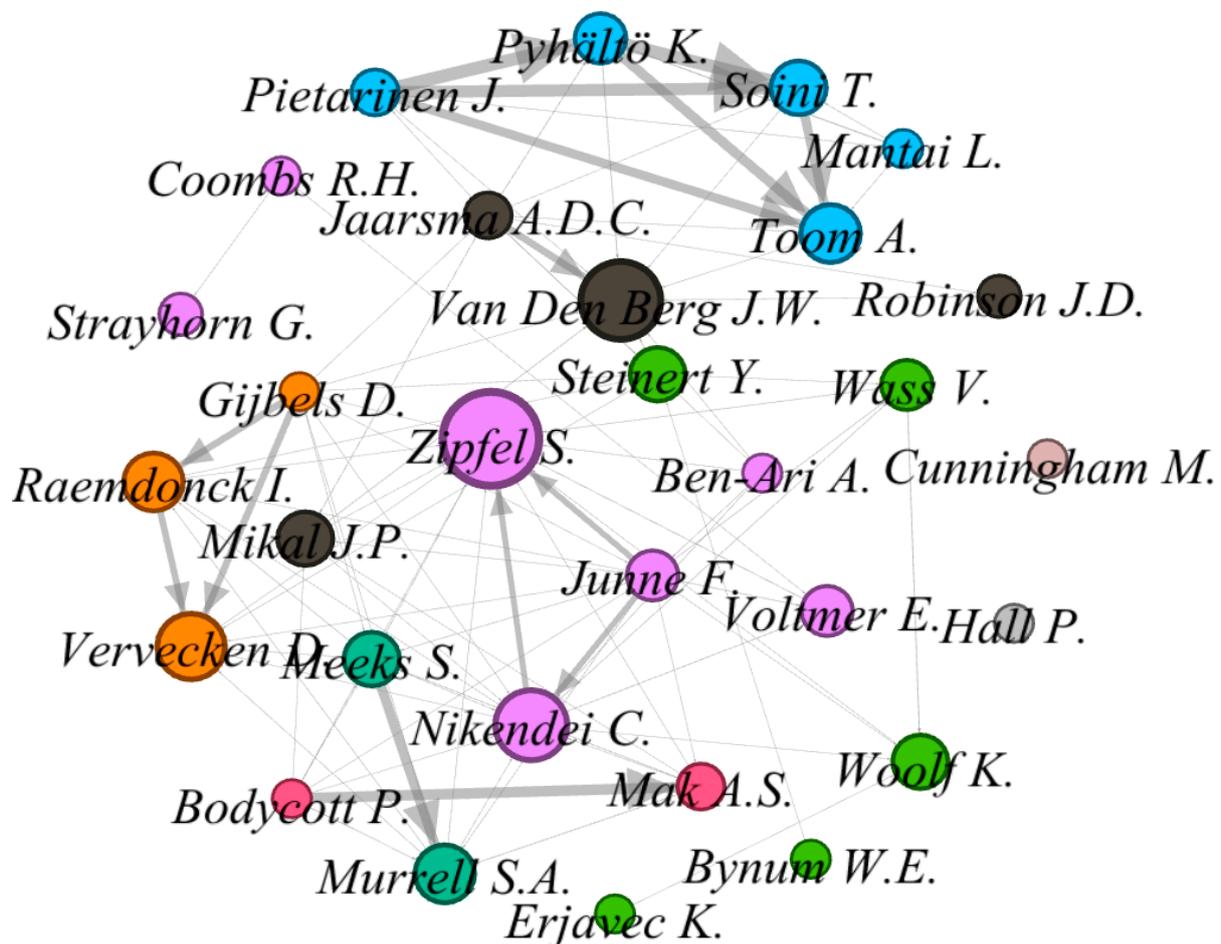
**Figure 6.** Bibliographic coupling of journals: total 259 journals, minimum no. of docs = 3, citations = 30 and 25 meet TH.

### 3.11. Bibliographic Coupling of Authors

Figure 7 presents the bibliographic coupling of authors in social support in education research. Authors with a minimum 2 documents and having 20 citations were included; 30 of 1602 authors meet the criterion. Authors with the highest bibliographic coupling activity included Pyhäntö, K. (University of Oulu, Finland) (5 publications, 74 citations, and 649 total link strength); Bodycott P. (3 documents, 23 citations, and 201 total link strength); Gijbels D. (3 documents, 43 citations, and 243 total link strength); Mak A.S. (3 documents, 23 citations, and 201 total link strength); and Pietarinen J. (3 documents, 53 citations, and 606 total link strength).

Authors are classified under nine different clusters. Details of these clusters are as under:

1 (7 authors), 2 (5 authors), 3 (5 authors), 4 (4 authors), 5 (3 authors), 6 (2 authors), 7 (2 authors), 8 (1 authors), and 9 (1 authors).



**Figure 7.** Bibliographic coupling of authors with a minimum 2 documents of an author having 20 citations each; 30 meet the TH.

### 3.12. Co-Citation Network of Authors

Figure 8 presents the co-citation network of authors in social support in education research. Authors with 30 or more citations are included; 24 of 1602 total authors meet the criterion. It shows that the top five authors are Dyrbye, LN, Bandura, A, Cohen, S, Shanafelt, TD, and Bakker, AB with weightage (citations) of 82, 78, 73, 67, and 61, respectively. Authors are grouped into clusters and connections between the clusters can be seen through quantitative network indicators. There are 5 total cluster of authors; 1 (11 authors), 2 (4 authors), 3 (4 authors), 4 (3 authors), and 5 (2 authors).

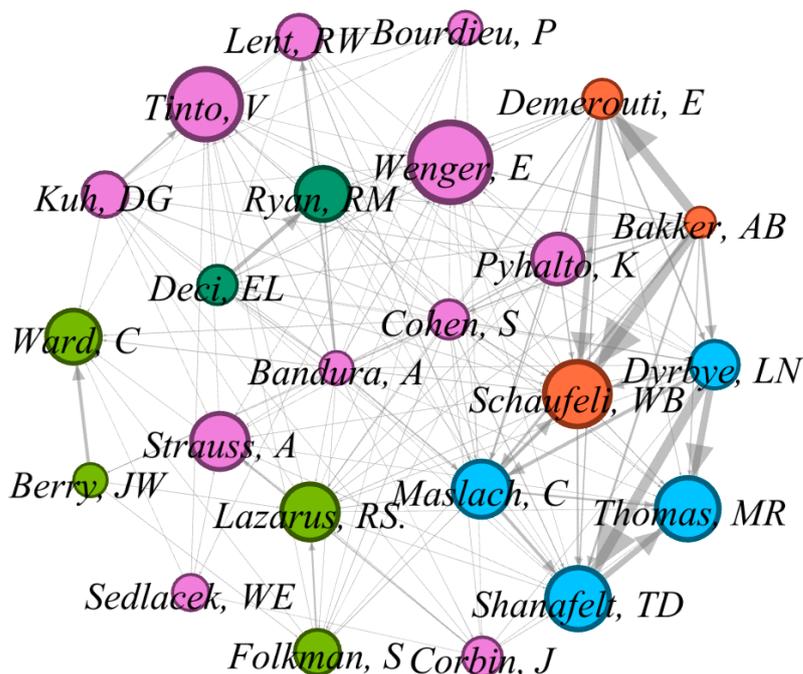


Figure 8. Co-citation network of authors with minimum citations = 30 times; 24 meet the TH.

3.13. Three-Factor Analysis (Countries, Keywords, and Journals)

Figure 9 presents the three-factor analysis of the relationship among countries, keywords, and journals. It shows that the top five countries (USA, United Kingdom, Germany, Canada, and Australia) published social support in education literature mostly using four main keywords (social support, education, higher education and stress). These countries and keywords have a strong relationship with five journals (Academic Medicine, Advances in Health Sciences Education, BMC Medical Education, Medical Teacher, and Medical Education). The leading positions of developed countries in medical sciences and medical journals being highly influential in this area [47] make these countries as main sources of publications and publishing institutions.

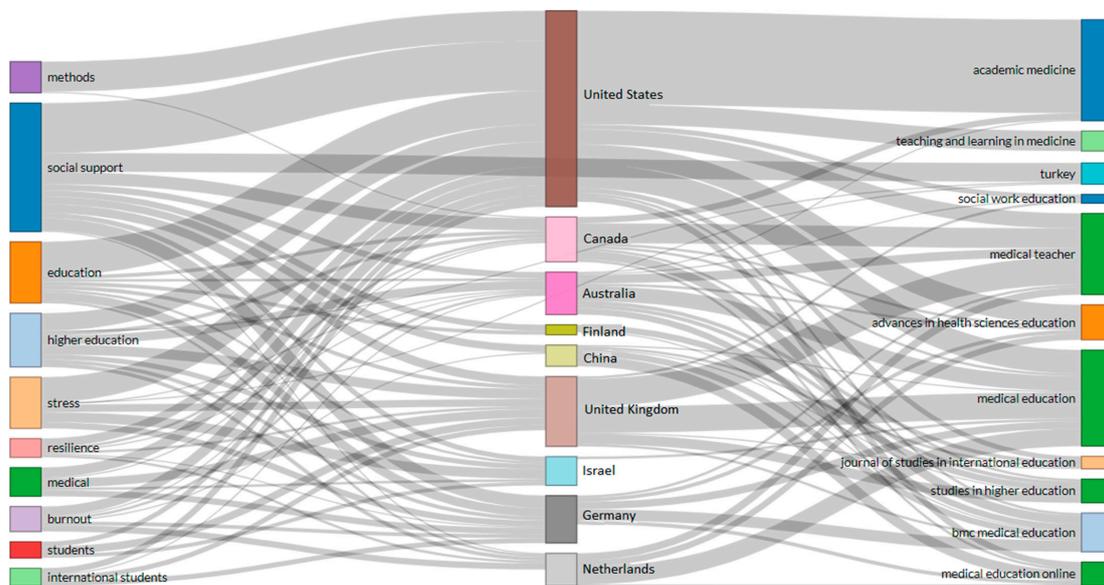
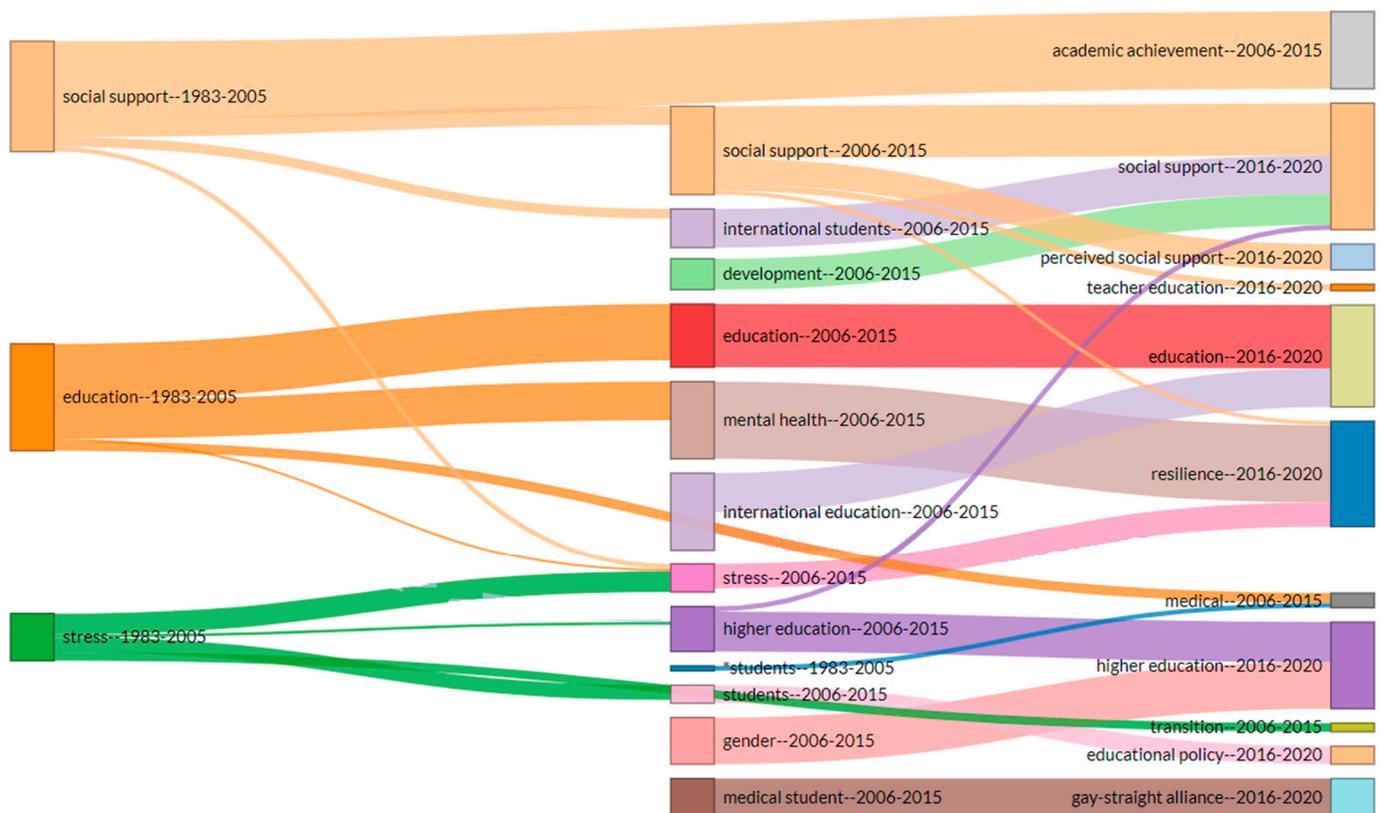


Figure 9. Three-factor analysis of the relationship among keywords (left), countries (middle), and journals (right).

Figure 10 demonstrates evolution of keywords in three different stages (1983–2005, 2006–2015, and 2016–2020). Keywords “social support and education” are important keywords as these show up in all three stages, however “stress” has only shown up in the first two stages. It is noticed that most of the research in this stage relates to medical students, gender and stress. This is supported by the high level of stress among medical students during those years [49,50]. Figure 10 shows that stage one (1983–2005) has little connection with stage two (2006–2015), as there are only two common keywords between these two stages; in addition, stage two (2006–2015), and stage three (2016–2020) have more common keywords as compared to the previous stage, which manifests that the focuses of these two stages are relatively close.



**Figure 10.** Thematic evolution map of keywords from 1977 to 2020 with respect to social support in education research. Usage and emergence of keywords related to this study is highlighted.

#### 4. Conclusions

Overall findings reveal that although social support research progressed slowly, it started gaining importance with the passage of time and has become a mainstream area in the field of education. This is evident by the number of publications and upsurge in number of citations. Social support was studied and practiced in the medical fields mainly for patients and at the community levels for families. The importance of social support to health care professionals in COVID-19 pandemic still form a major part of COVID-19 related research [51–53]. Similarly, during the pandemic, research on social support to patients and people suffering due to pandemic related mental health problems was also a main research agenda in 2020 [54–56]. No doubt, the main reason behind the importance of social support in education is the diversity of students enrolling in universities requiring social support at the institutional level. Social support will become even more crucial in this pandemic that the world is going through. As found, social support along with administrative, course design and technical support has a positive

impact on the quality of e-learning in higher education during the COVID-19 pandemic [57]. Being the first bibliometric study in the field of social support in education, the present study will help the researchers to identify the previous research trends and research gaps, and implications of research. It will also help the educational policy makers, educationists and educational administrators to make informed decisions in the current scenario of the COVID-19 pandemic. A limitation of the study is its reliance on a single database source (Scopus) and its selection of broader keywords “education AND social support”. This study is also limited to purely correlational and quantitative nature and hence the results of the study may be strengthened with qualitative inspection of materials. Future research may explore and evaluate the importance of social support in the context of the specific education level, for example, higher education or primary level.

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